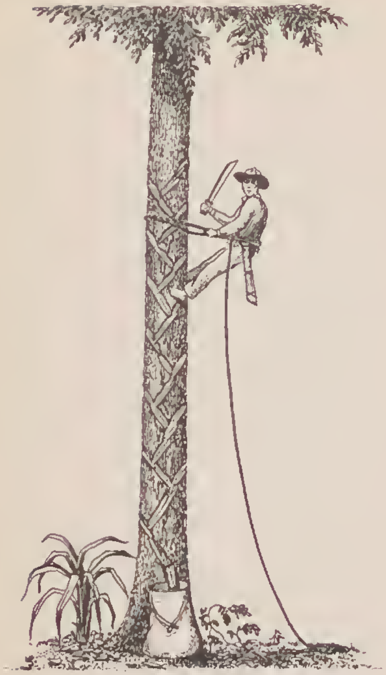
FIELD MUSEUM STORIES

From Chiclero to Chewing Gum

Series XLI, No. 1
October 2, 1943

Looseleaf No. 80



The chiclero at work

The "chew" in your chewing gum came originally from the damp and humid jungles of Central or South America, or perhaps from far-away Malaya. The *chiclero* is the man who started it on its way to you. Early each morning during the rainy season (June to February) he sets out from his jungle camp, his machete in hand, to select sapodilla or chewing-gum trees for future tapping, or to tap the trees marked at some previous time. "Tapping," you know, means cutting the tree so that the sap may be collected.

With his razor-edged machete the *chiclero* makes cuts in the bark of the tree in a zigzag pattern from the base of the trunk to the place where it branches. These zigzag cuts cause the milky sap or latex to flow down a central groove to a canvas bag called a *bolsa.* Beginning at the base of the tree he makes his cuts or incisions as high as he can reach from the ground, and then, using a rope looped around the tree and fastened to his waist, he ascends the tree, carefully cutting the feather-like pattern as he climbs. Some *chicleros* use iron spurs similar to those used by telephone repairmen, but most of them climb barefooted.

Surprisingly few natives are able to meet the two requirements for a job as *chiclero*—ability to climb well, and skill in the use of a machete, so that the trees are not killed in the process of tapping; consequently a *chiclero* is an important man in his community and is the best paid of all native workmen. However, his work is seasonal and is controlled not only by the length of the rainy season but by the daily humidity, sun, wind and temperature, for the sap flows only as long as the air remains damp.

The afternoons, often too dry for tapping, are given over to the marking of trees to be tapped in the future and the collecting of latex from the bags. At the camp the latex is emptied into huge steel kettles and after being boiled is poured into molds where it cools, forming blocks that weigh about twenty-five pounds. These blocks are wrapped in fiber bags and started on their journey to the factory in dugout canoes, on muleback, or even by airplane.

Arriving at the factory, the gum is refined and purified, the flavoring and sweetening are added, and the carefully blended material is rolled, cut and packaged.

Gum-chewing is not a modern habit. When the early Spanish explorers first visited Central America they discovered the Mayan Indians chewing a gum obtained from a tree used by the natives for building purposes. This gum was the latex of the sapodilla tree, the present source of our chewing gum. The Indians of our eastern States also chewed gum, which they obtained from the spruce tree.

The history of modern chewing gum dates back to the year 1860, when some chicle (latex in solid form) was brought to the United States by the Mexican General Santa Ana, in the hope that it might be vulcanized and used as a substitute for rubber. Experiment proved it worthless as a rubber substitute but its value as a confection was discovered, opening a new field of experiments.

In many ways the chicle industry has paralleled the rubber industry, and perhaps post-war planning will include the growing of sapodilla trees on plantations. Close supervision of tapping might extend not only the life of the trees, but also the life of the *chiclero*, who is exposed to malaria and other tropical diseases caused by the continual dampness. Experiments have been unsuccessful to date, the planted trees yielding very poorly.

Dentists tell us that the habit of gum chewing in private has its virtues and actually aids in keeping the teeth and mouth free of food particles. The War Department has recognized the value of chewing gum by including it in the emergency kits of our armed forces.

VELMA D. WHIPPLE
Raymond Foundation

NOTE: Case 848 in Hall 29 contains a branch of the sapodilla tree, the flowers and fruit, and also samples of the latex, chicle and gum.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

The South Sea Islands

Series XLI, No. 2
October 9, 1943

Looseleaf No. 81

THE SOUTH SEA ISLANDS

Many of the islands scattered over the Pacific Ocean between America and Asia seem like bits of fairyland floating on the water. It is always summer time on most of them, and flowers, palm trees and other tropical plants grow in abundance.

Hawaii

Some of the South Sea Islands are really the tops of volcanic mountains rising high above the water; others are made of coral deposits resting on mountains buried under the ocean. The mountainous interior of many islands is covered with a dense growth of ferns, palms and other plants. Near the shore are narrow stretches of level ground on which we may catch a glimpse of native villages and garden patches. Often the coral reefs along the outer edges of the islands form barriers between land and sea.

Geographers divide the South Sea Islands into three groups: Melanesia, Micronesia and Polynesia. The word Melanesia means "black island," and the name was given to the first group of islands because most of the natives have very dark skins. Micronesia means "small island," and all of the islands in the group deserve the name. There are so many islands in the third group that it was named Polynesia, "many islands."

Polynesia includes the Hawaiian Islands north of the equator; New Zealand far south of it; Easter Island, farther eastward, on the way to America; and Samoa, on the international date line. There is a tradition among the Polynesians that they all came originally from Savaii, the largest of the Samoan Islands; thus Samoa may be the historical as well as the geographical center of Polynesia.

In watching the natives of Samoa at their work and play, we can learn many interesting facts concerning life in the South Seas. They are excellent swimmers and are skilful in managing their dugout canoes. Fishing occupies much of their time. The children gather crabs and shellfish. One large crab is called "robber," because it climbs trees and steals coconuts. The young men and boys catch fish on the ends of spears or in nets. Sometimes they capture a turtle, a shark or an octopus. Once a year the natives have a great feast of worms, which are caught in nets, roasted and eaten.

Next in importance to sea foods is the coconut. The meat of this fruit is often shaved into bits and eaten like pudding, and the milk takes the place of drinking water, when that is scarce. Samoans are very fond of a drink made from the roots of the Kava plant. The ceremonies of making and drinking Kava are elaborate. A healthy young girl with good teeth, who is chosen by the village chiefs, chews the roots to a soft pulp. Then the juices are mixed with water in a large wooden bowl, and the solid pieces are removed with a fiber strainer. The yellow liquid is served to the chiefs in order of their rank, and the common people must wait until the noblemen have had their share.

Samoans, like other South Sea Islanders, are famous for making bark-cloth. The inner bark of the paper mulberry tree is soaked in water and then beaten with a grooved wooden mallet. Several layers of the soft fiber are glued together with arrowroot paste. The cloth is decorated with the aid of a stencil or stamp made of coconut and Pandanus leaves. The artist uses a certain kind of earth and a varnish-like sap for red and brown colors; the candlenut mixed with oil, for black; and the root of turmeric, for yellow. Both men and women wear tapa-cloth skirts. They wear necklaces of shells and seeds and deck their hair with flowers.

The Samoans are graceful dancers. Men, women and children take part in ceremonial dances called "sivas." Until recently boys could not be counted as men unless they were tattooed. The process is painful, for needles with colored dyes are forced beneath the skin in order to make a permanent design on the body. Everything in the village must be done in accordance with the ancient customs. Custom is really the most important law.

The natives of the Samoan Islands have brown skin and very dark hair, and some of them are very beautiful. They are said to be among the tallest people in the world. These people, like all Polynesians, probably originally belonged to the white race, but some of them have intermarried with black, yellow, or brown peoples.

MARGARET FISHER
Raymond Foundation

Reprint from Series V, No. 9, November 27, 1926.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

The Bats—Ace Fliers

FIELD MUSEUM of NATURAL HISTORY
FOUNDED BY MARSHALL FIELD 1893
CHICAGO

Series XLI, No. 3
October 16, 1943

Looseleaf No. 82

THE BATS—ACE FLIERS

Bat

Bats are almost always thought of in connection with witches, goblins, evil spirits and bad luck. There are even silly stories about bats flying into people's hair, though there is no record that this ever happened. How do you suppose the bats came to have such a bad reputation? Perhaps it is because most bats sleep during the day and fly only after dusk when it is very difficult for us to observe them. Perhaps it is because they are the only mammals that really fly, and for years many people believed bats to be a strange kind of bird. It is also true that vampire bats have the very unusual habit of living on a diet of blood, and they have helped to give all bats a bad reputation. At any rate, the bat has been a very misunderstood mammal for a long time.

Bats are found all over the world except in very cold countries. Some of them are almost as small as hummingbirds, while others have a wingspread of more than five feet. Their fur may be red, yellow, white, silver or a shade of brown. They live on many kinds of food. Some African, Australian and Philippine bats, among which are the largest of all bats, are known as fruit-eaters, because they live on the wild and cultivated fruits of those countries. The fish-eating bats of Trinidad are said to scoop up the fish in the membrane of skin between their legs, although no one knows exactly how this fishing is done. Birds, mice and rats fall prey to certain bats of India, China and South America.

The vampire bats live only in Mexico and Central and South America. Blood is their sole food, since their teeth and digestive systems are not fitted for any other diet. A vampire bat will gouge out a little of the skin of an animal with its sharp front teeth and lap the blood as it flows from the wound. Occasionally one will bite a sleeping man, usually on the big toe, if it is sticking out from under the blankets, and the attack is so gentle that it does not awaken the victim. The danger of the vampire's bite lies in repeated attacks and in infection.

All the bats of the United States are insectivorous (insect-eating), medium to small in size, and harmless. Their teeth are too small and weak to injure anyone seriously. Many insects upon which they feed are harmful to man in one way or another.

The bats are very interesting because they fly with marvelous control. No insect-eating bat ever deliberately landed in anyone's hair, and he is far too skilful a flier to happen there accidentally. He can nose-dive, bank, and "stop on a dime" while "flying blind" in the darkness of the night or in a gloomy cave. "Blind as a bat," however, is a rather meaningless expression since bats are not blind, though it is true that they do not see well in the bright sunlight. The eyes of insectivorous bats are well-developed though so small that the bats cannot possibly see the tiny insects upon which they feed. Scientists have experimented with the bat's control in flight. They tell us that the key to the mystery seems to lie in the animal's highly developed sense of touch. The bat is apparently very sensitive to air pressure and sound waves. Perhaps it can feel and hear insects it cannot see.

Bats often rest by hanging upside down from seemingly smooth surfaces. They are able to do this because of the sharply curved claws on their feet. Most bats also have small claws on their thumbs, and the fruit-eaters have two claws on each wing, one on the thumb, the other on the first finger.

Scientists who have experimented with bats say that they are queer animals. Sometimes they are wide awake and active for a while, and then suddenly become sullen and temperamental. They will retire to some corner, hang themselves up by their feet and refuse to budge for hours. Some of them are said to have very bad dispositions, but perhaps that is due, at least in part, to the fact that they are often rudely awakened from a sound sleep.

It is unfortunate that our small, harmless and really beneficial bats have been misunderstood only because of their unusual habits and appearance and the bad reputation given them by a few South American cousins, the vampires, who turned out to be the "black sheep" of the family.

VELMA D. WHIPPLE
Raymond Foundation

NOTE: Bats are shown in Hall 15.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

Spices

Series XLI, No. 4
October 23, 1943

Looseleaf No. 83

SPICES

Spices add the zip and flavor to many of our foods. Without the familiar pepper, mustard, vanilla, nutmeg, cinnamon and cloves, as well as countless other less known spices, our meals would be flat and tasteless. Until the present war we took spices for granted and gave little thought as to where they came from or how they were obtained. Today we realize that most spices come from the tropics of Asia and the East Indies and because of war conditions are hard to get in this country.

Flowering branch of clove

In ancient times these spices were also hard to get; they often had to be brought by slow caravan route across Asia to western Europe, and they were prized more than many jewels. They were so much in demand that adventurous traders were always trying to find new and shorter routes to the "Spice Islands," and it was while on such a quest that Columbus discovered America.

All spices are dried plant products—fruit, stem, bark, root or flower-bud. The ginger known to all of us in ginger ale and gingerbread is the root of the Zingiber plant which grows in almost all warm countries. It is said that Marco Polo saw the ginger plant growing in China about the year 1280; the Chinese called it "gingi." The parts of the ginger plant above ground look like our common iris, or flag; the roots are large, spongy and yellowish. Calcutta, in India, exports more ginger than any other city in the world.

There is a tree the name of which means "sweet smelling," and it bears two fragrant spices, nutmeg and mace. The fruits look very much like apricots but the fleshy part around the seed is too dry and leathery to eat. When the fruit is ripe it bursts open, disclosing a bright red net-like membrane stretched over a brown shell. Inside the thin shell is hidden a brown kernel, and this is the nutmeg. Sometimes the nutmegs are sent to market in their shells, but more frequently they come without their shells and covered with lime for protection from insects and to prevent sprouting. People often buy nutmeg kernels and grate them at home, since powdered nutmeg loses some of its flavor.

The red membrane between the outer husk and the nutmeg shell is the spice known as mace. Mace is usually removed by hand from the nutmeg and is dried until its color changes to golden brown. Although they are parts of the same plant, mace and nutmeg have a different flavor. The greatest nutmeg plantations in the world are in the Banda Islands of the East. There are some fine gardens, however in the West Indies. One splendid tree in Jamaica bears over 4,000 nutmegs every year.

One of the most beautiful of all known trees is the clove tree, a native of the Molucca Islands in the East. Its pink flowers grow in clusters at the ends of the branches, surrounded by many leaves. The whole tree smells of cloves, although the flowers are the only parts used as spice. Cloves are flower-buds with petals folded snugly in a tight ball on top of a long flower base. Hidden inside the flower base or calyx are the seeds. If the flowers are allowed to go to seed before they are gathered they lose their flavor.

One of the most valuable spices comes from the bark of the cinnamon tree. It is the hardiest of any of the spice trees and grows best in the island of Ceylon. It is said to have been the first spice sought in early Oriental voyages. Bible history records cinnamon as a favorite spice among the ancient Hebrews. Roman historians told strange stories concerning the much-desired spice. According to one tale some large birds carried sticks of cinnamon from India to Arabia and built their nests of them. The Arabs were supposed to have destroyed the nests and sold the cinnamon in foreign markets.

Today, some spices are being produced in the warm tropics of the West Indies and America but the greatest supply is still obtainable only from the Asiatic countries. Some of the spices are being replaced by artificial products—vanilla is a good example—but in most cases the substitute is not as good as the real spice.

MARGARET FISHER
Raymond Foundation

Reprint from May 29, 1926.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

Desert Caravan

Series XLI, No. 5
October 30, 1943

Looseleaf No. 84

DESERT CARAVAN

Across the silent, sandy wastes of the Sahara Desert moved the camels of Hassan Mohammed. He sat cross-legged on the lead camel, head bowed, shoulders drooped languidly, his gown pulled closely around him. His head and face were almost entirely covered by his head cloth. Very little of Mohammed's skin was exposed to the sun's burning rays because, like his brother Arabs, he dressed heavily "to keep cool during the hot day" as well as to keep warm and dry during the cold, dewy nights.

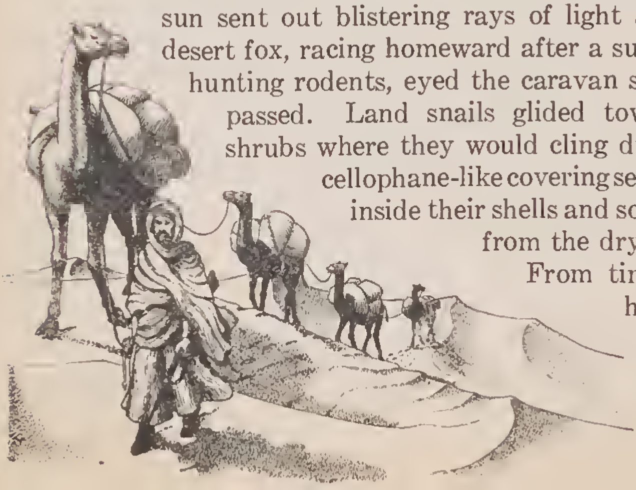
The camels moved steadily and rhythmically, Mohammed's body swaying in time with the motion of the animal he rode. So quiet did he remain that one would almost have thought him asleep.

Both man and animals had been up even before the first rays of light were reflected against the dunes where they had made camp the night before. With the coming sun, Mohammed's first act had been to face eastward toward the holy city of Mecca and pray . . . an appeal to Allah to guide him safely over this desolate area. Kneeling upon his prayer-rug, which went with him everywhere, Mohammed had touched his forehead to the ground several times, softly repeating verses from the *Koran* as he moved. This done he had risen and rejoined his camels, who were anxious to be released from the knee-ropes that had kept them from straying.

Then had come a breakfast of energy-giving dates for Mohammed and dry grass for his animals, who grunted and roared in anticipation of their food.

In the cool hours before dawn a desert lark had sung in a shrub a short distance from Mohammed's camp, but now as the glowing sun sent out blistering rays of light all was still. A desert fox, racing homeward after a successful night of hunting rodents, eyed the caravan suspiciously as it passed. Land snails glided toward the desert shrubs where they would cling during the day, a cellophane-like covering sealing them safely inside their shells and so sheltering them from the drying winds.

From time to time Mohammed eagerly eyed the end-



Camels in caravan

less horizons for a sign of the familiar objects at the end of his long journey. The caravan was four days out from the last oasis and the supply of water which he had brought with him was running low. He increased the speed of his herd, for a strong wind had started to blow, bringing with it sharp, cutting grains of sand. It was the season of the *Khamsin*, the "wind of fifty consecutive days," and Mohammed had no desire to be caught in such a storm. To protect their noses and lungs from the swirling sands, the camels closed their slit-like nostrils as they headed into the wind, while their master, unable to close his nose in a like manner, depended upon his veil to keep his nose and throat from being filled with sand. For a while the caravan continued to struggle against the wind, then one by one the camels dropped to the ground to rest and wait for the storm to stop, their bodies making barriers against which small dunes began to form.

When the storm was over the journey continued. The sun reached its zenith in the sky and started downward. There was scarcely a sound as the soft-footed caravan moved ghost-like over a great dead land. In this way the long afternoon passed, until at last the sun relaxed its grip. Toward evening the hot day closed over the heated earth, as the sun set. Again Mohammed dismounted and prayed.

Some time that evening Mohammed reached the oasis where he lived. To the Mohammedan an oasis means a "resting place" and a joyful sight after traveling long days in the barren desert. The scattered oases in the Sahara are as ports to those who roam the highways of the oceans.

BERT E. GROVE
Raymond Foundation

NOTE: The life of the Tuareg tribe of the Sahara Desert is illustrated in Hall 4, the special War Exhibit Hall.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

Cloth That Grows on Trees

Series XLI, No. 6
November 6, 1943

Looseleaf No. 85

CLOTH THAT GROWS ON TREES

Money may not grow on bushes, but clothing sometimes grows on trees! On some of the islands in the Pacific Ocean clothing made from the bark of trees is a common sight, and the making of bark cloth is a very old industry. It is sometimes called "tapa," which means "the beaten thing."

Bark cloth

Bark cloth is used not only in the Pacific but in several other places around the globe, especially in Africa and in South America, but it reaches its highest development in Polynesia. Its production is gradually becoming a lost art, for when the white man introduces cotton or other types of cloth into a tapa area, the native peoples usually prefer the white man's material to their own.

Tapa cloth is always made by the women and children. The wood must be selected carefully, and only the bark from certain kinds of trees is used. The paper mulberry furnishes the best quality of bark for cloth, but in some places that of the breadfruit tree is used, and in other places that of a wild fig. The mulberry makes the finest and whitest cloth. Breadfruit makes cloth less white and soft than that made from the mulberry. It is worn chiefly by people of lower class. Wild fig is by far the rarest. It makes a coarse, harsh cloth, the color of the deepest brown paper. It is the only bark cloth that resists water and is therefore valued highly. Most of it is perfumed and used as a mourning dress.

In selecting the tree, young plants of one or two years' growth are chosen because they are thin and straight and tall and without large, tough branches. First, the bark is removed, and the outer bark separated from the inner, fibrous layers. It is the inner layers that are used for the cloth. The bark is boiled until it is so soft that it is almost like pulp. Then it is placed in a stream where the running water continues to loosen the fibers and washes away any remaining sap. Next, the pulp is beaten with an implement made from the hard wood of the sugar palm. Deep grooves cut into the lower side of the beater leave ridges over the surface of beaten pulp and hold the mass together. When the pulp begins to form a paper-like sheet, it is pounded with flat pieces of stone, also grooved, and having handles of rattan.

During the beating process, the pulp may dry too fast, so it must be constantly sprinkled with water. When the pulp is very thin, it is spread on the ground to dry. It may be so thin that there are holes in the sheet, in which case several layers may be glued together with an arrowroot paste.

Tapa cloth is usually decorated with simple, beautiful, geometric designs that are either painted on or stamped on. The colors used are native vegetable dyes, principally red, yellow, black (soot), and brown. Certain tapa designs have a religious significance and are used only for the decoration of ceremonial objects.

Tapa has many uses other than as clothing, some of which are bedding, shrouds for the dead, mosquito curtains, floor coverings, and binding cord. Sometimes large, decorative pieces are hung up as partitions in houses or as ornaments on the walls and porches. White, undecorated tapa is often used as a bandage, and tapa is also used for kites. In the early days, missionaries in Hawaii used a tough, thick variety of tapa as a binding material for books.

Extra sheets of tapa are folded in squares and stored away for barter or for presents. Perhaps you have received a bundle like this from one of your relatives or friends in military service. If so, you may be wondering how to open it. Sprinkle it with water and repeat the process over a period of several hours—perhaps for an entire day—until the whole sheet becomes slightly damp. Then unfold it very carefully, watching that it does not tear. Run a cold iron over it to take out the creases. You will have a handsome wall-hanging. But remember, although tapa is durable and will stand much hard use, it cannot be washed.

Roberta Cramer
Raymond Foundation

Note: Examples of bark cloth can be seen in Hall F, Cases 31, 42.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

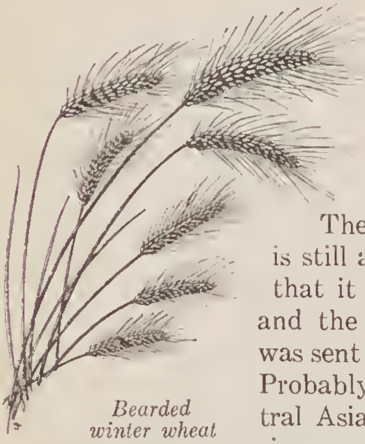
Story of Wheat

Series XLI, No. 7
November 13, 1943

Looseleaf No. 86

THE STORY OF WHEAT

Wheat is today the commonest and one of the most important of all grains and cereals. It makes up one-fifth of the diet of the average North American family, for from it are made the finest of breads.



Bearded winter wheat

Great amounts of wheat must be raised every year. The United States, although it produces only one-fourth of the world's crop, raises 800,000,000 bushels of wheat yearly.

The exact geographical origin of wheat is still a mystery. The Egyptians claimed that it originated with Isis, their goddess, and the Chinese believed that wheat seed was sent to them as a direct gift from heaven. Probably it first grew as a wild plant in central Asia around the Euphrates and Tigris rivers, and at some early date primitive man discovered the seeds of this wild plant and found them good to eat.

Wheat has been found in the ruins of the Swiss Lake region; it has been found in ancient Egyptian graves; the Bible refers to it time and again; it has been raised in Mesopotamia for at least 5,000 years. Although the exact date of its domestication cannot be told, wheat is thought to be the most ancient of all cultivated grains.

The Spaniards introduced wheat into this continent when they brought it to Mexico in 1520. The following century the English carried it to New England and to Virginia, and since then many kinds of wheat have been produced to meet the needs of different soils and different climates.

At first, owing to the difficulties of preparing the soils, the settlers raised just enough wheat for their own use. In those early days grain was sowed by hand and cut with scythes. Treading or pounding the wheat threshed it or separated the grains from the straw.

These old methods took time and made it necessary for large numbers of men to harvest the wheat. Today, machinery takes the place of many men, and if you have ever been on a farm at harvest time, you know how quickly and how thoroughly the machines do the work. It is at this harvest time that you may look out over great fields of wheat turned a beautiful golden yellow. In the western part of the United States some of the fields are enormous, one farmer sometimes growing 1,000 acres. In western Canada wheat is king of all agriculture. Fields stretch 800 miles to the east and to the west, and elevators dot the landscape. One single wheat field contains 7,000 acres.

Wheat is also raised in South America, Australia, New Zealand, the northern and southern tips of Africa, Europe, China, India, and Egypt, but not all of these countries have modern ways of caring for their wheat as we have.

If you should go to Palestine today at harvest time, you would see the reaping done in a manner similar to that of long ago. It would remind you of the old Bible story of Ruth and Boaz. The men, wearing vivid turbans, white garments and leather aprons, work in the fields with the women, who are usually dressed in blue homespun and white flowing veils. They cut the wheat with hand sickles, wrap each sheaf with a few straws, and pile it up to dry. Some of the wheat usually drops and is left behind, and this is gathered up by the widows and orphaned girls for their own food. The Bible story tells you that Ruth gathered the remaining wheat in the field of Boaz. Camels carry the grain from the fields to the threshing floors, where the women and children drive cattle or donkeys over the piles of sheaves. After the workers and gleaning women leave the fields, the shepherds bring in their flocks of sheep to graze there.

What a difference there is between the wheat fields and reaping in America and that of Palestine and of long ago. However, no matter how the wheat is raised, taken care of and harvested, it is still considered the "staff of life" for many people all over the world.

MIRIAM WOOD*
Raymond Foundation

NOTE: In Hall 25 you may see the different kinds of wheat that have been developed from the wild grass, some wheat from an ancient Egyptian tomb and some ancient Mesopotamian wheat 5,500 years old. This is thought to be the oldest wheat in the world.

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* Reprint from Series XIX, No. 7, 1932.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

Coconuts

Series XLI: No. 8
November 20, 1943

Looseleaf No. 87

COCONUTS

Climbing a fruit tree to get apples is easy compared to reaching the top of a palm tree to get coconuts. The stem of the coconut palm rises from sixty to a hundred feet in the air, without a branch. At the top the long leaves form a huge "feather duster," with large bunches of fruit, almost hidden, near the center.

Climbing a coconut palm

The coconuts in the clusters are much larger than those in the market, for those in the market have had the outer husks removed. The coconut is protected by many coats: a brown outer covering, rather thin but tough; beneath this a spongy husk an inch or more thick, made of a mass of fibers; and, underneath the fibrous coat, the hard shell in which the coconut is sent to market. Within this shell are found the meat and milk. One end of the coconut has three small round "eyes," which give the fruit the appearance of a monkey's face with a rounded mouth.

Like other palms the young coconut tree sheds its lower leaves continuously, and the slender stem is rough with leaf scars that show where the leaves were attached. There are two kinds of flowers: small ones filled with pollen, and larger ones which later become the fruit. When the wind blows, the pollen from the small flowers is scattered over the big ones. These large flowers, which at first look like tiny pumpkins, soon grow larger and turn green. For a time they seem like young acorns and then they begin to develop the thick outer covering of the full-grown coconut. Coconut palms begin to bear fruit when they are six or seven years old and continue to produce crops for almost fifty years. Flowers and fruit can be seen on the same tree practically all year, as is often the case with tropical plants.

In some of the islands in the South Pacific the coconut palm produces most of the things used by the natives in their daily life—food, clothing, and shelter. The milk in the young fruit is used as a drink, and the sap of the tree is boiled down to sugar or fermented to produce palm wine. The fresh coconut buds make an excellent salad, and the softer portions of the meat, mixed with milk, are eaten as a pudding.

The coconut shells make good dishes. They are carved and polished into cups and bowls, and sometimes these are painted with a mixture of coconut oil and ocher or some other coloring matter. Sometimes the natives seek the aid of a hungry shrimp to hollow out coconuts so that the shells can be used as bottles. Coconuts with their "eyes" punched open are placed in the water where the shrimp lives, and the creature swims through the eye into the center of the coconut and eats out all the meat. Then the unbroken shell is used as a bottle.

The leaves of the coconut palm are used to thatch the roofs of huts and are woven into mats and baskets; they are also split and used to provide a natural fringe for skirts.

The fiber of the outer husk of the fruit is twisted into a yarn called "coir," which is used to make mats, baskets, and rope. Coir rope is especially valuable because it is impervious to salt water.

But probably the most useful part of the coconut palm is the dried fruit, called "copra," one of the most valuable sources of oil in the world. The natives use the oil, which forms almost 50 per cent of the copra, to grease their bodies for protection from the salt water. But this oil is also their principal export to foreign countries. In this country it is used in the manufacture of soap and butter substitutes. One of the reasons for the present scarcity of soap is the lack of the coconut oil that was formerly imported from the war areas in the South Pacific.

MARGARET FISHER*
Raymond Foundation

NOTE: Coconut palm exhibits may be seen in Halls 25 and 29.

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* Revision of story in Series VIII, No. 3, March 10, 1928.

This page is for your own notes and illustrations

FIELD MUSEUM STORIES

American Opossums

Series XLI, No. 9
November 27, 1943

Looseleaf No. 88

AMERICAN OPOSSUMS

The Virginia opossum and its relatives, the Texas opossum and the Florida opossum, are the only North American representatives of the marsupials (pouch-bearing mammals). The opossums are a strange remnant of a group left over from bygone ages when marsupials were plentiful. Their general appearance is like that of a rat, but their long, scaly, hairless tails are prehensile, their noses longer and their ears bare.

Opossum with young

The opossum family is a large one, many members being found from eastern North America south through Central and South America. Their nearest relatives are the dasyurids of Australia, called opossums by the people there although they are not true opossums.

The Virginia and common Mexican opossums are the best known of the group. They are nearly the size of a cat, with gray, woolly fur. They are at home either on the ground or in the trees, for their hind feet bear grasping toes and their long, snaky tails can be looped around small limbs so they can climb very well indeed. Climbing is very necessary since this is a good method of escape from their many enemies. Their favorite food is persimmons, for which they must often climb, but they also eat a variety of foods, including acorns, berries, and roots. Often they do a little damage by taking birds' eggs or killing chickens, but their value as fur-bearers more than offsets this.

Opossums have many interesting habits. Their days are spent sleeping in hollow logs and trees, and their hunting is done at night. They do not hibernate all winter as do the woodchucks. Theirs is a sleep of happy convenience. If the weather is bad, they stay snugly in bed rather than go out hunting.

But too often during their nightly rambles they hear the baying of the hounds and find themselves captured by dogs or men. When cornered by such an enemy, they appear to faint or die from fright. From this we get the expression "playing 'possum." However, they recover from their lifeless state rapidly enough and are ready to take advantage of any opening for escape.

The young are born in the spring and are about half an inch long. They make their own way to the pouch or pocket which is found on the under side of the mother's body, like that of a kangaroo. Often the young ones climb out to have a look at the world and often they steal a ride on their good-natured mother's back, their chins hooked over her backbone and their little hairless toes firmly gripping her wavy gray fur. There are usually five to thirteen young born at a time.

Besides the well-known Virginia opossum, there are various other species which inhabit other parts of the Americas, especially the tropical parts. One of these is the murine or mouse opossum from Central America. It is much smaller than the Virginia opossum, being truly of mouse size. It is soft-furred, yellow or brownish in color, with long, naked, prehensile tail, large eyes, and broad hands and feet. The young opossums are not carried in a fur-lined pouch but cling to the fur of the mother. The members of this group live entirely on insects and fruits.

The feet and tail of the Mexican woolly opossum are well adapted for climbing. The fur is thick, soft and woolly and of a dull yellowish or grayish color. The face is pale gray except for a dark brown streak down the forehead. There is no abdominal pouch in this group either and the young are carried on the mother's back.

The Quica opossums from South America are shorter haired than the woolly or common opossums and spend more time on the ground than in the trees. They are dark grayish in color. Their favorite foods are ground-nesting birds and crabs, which they find along the banks of streams. These opossums have a pouch for carrying the young.

"Yapocks" or water opossums of South America also have pouches but differ from other opossums in having webbed hind toes.

Except for the Virginia opossum very little is known of the habits of the opossums. Most of them live in lowland tropical jungles or in dense forests near the bottoms of mountains and such places are hard to explore. Then, too, opossums are active only at night.

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NOTE: Marsupials may be seen in Hall 15, in the case where the kangaroos are shown.

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